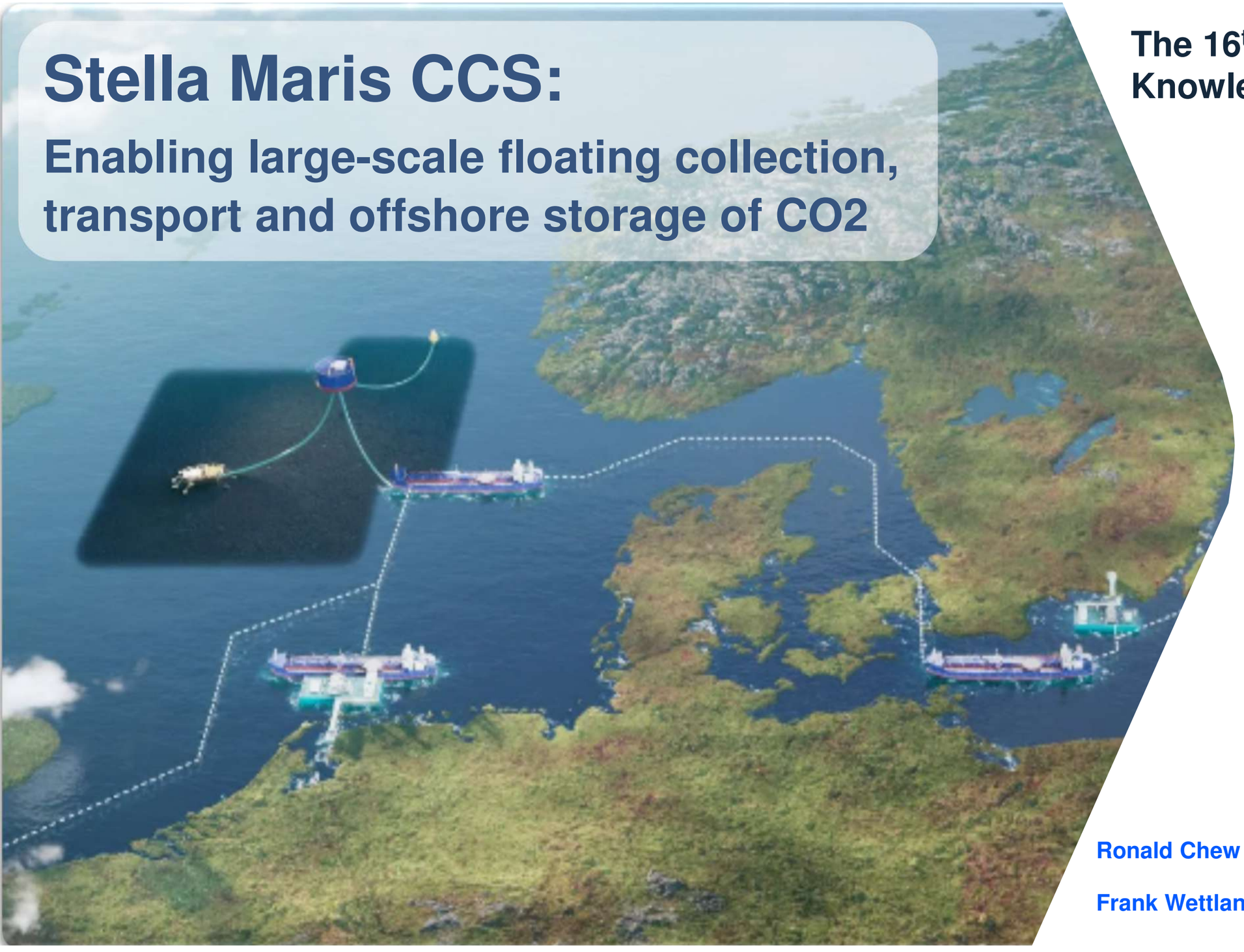
Stella Maris CCS:

Enabling large-scale floating collection, transport and offshore storage of CO2



The 16th Asia CCUS Network Knowledge Sharing Conference

23 August 2024

Ronald Chew (Business Development)

Frank Wettland (Project Manager, CCS)

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Agenda

- ❑ Company Introduction
- ❑ Why the need for CCS and Economics
- ❑ Stella Maris CCS Value Chain Technical Concept
- ❑ Business case and Project Development

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Altera Infrastructure Group Overview

Stella Maris CCS is a wholly-owned company focused on developing a 10mtpa carbon management platform company

Altera Infrastructure at a Glance(1)

~2,400 Employees

9 Offices

37(2) Vessels

~$3.7bn Assets

~$2.8bn Revenue backlog(3)

High Quality, Diversified Customer Base

Group Structure

Brookfield — 88%

Minority Investors — 12%

Altera Infrastructure Holdings

Altera Shuttle Tankers	Carbon Capture	FPSO / FSO	Other Assets
19x Shuttle Tankers	10mtpa CCS Development Business	6x(2) FPSOs 2x FSOs Brazil FPSO JV	1x Accommodation Unit

(1) Unless otherwise specified, as of Q4-22
(2) Includes 2x FPSOs owned 50%
(3) As of Q4-22, excluding options

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TEEKAY OFFSHORE

Strong Sponsorship from Brookfield

One of the largest investors in real assets and industrial companies, with a global perspective and significant $15bn+ capital for the energy transition

$750B+
ASSETS UNDER MANAGEMENT

~180,000
OPERATING EMPLOYEES

~1,000
INVESTMENT PROFESSIONALS

Renewable Power & Transition

$68B

Infrastructure

$137B

Private Equity

$121B

Real Estate

$260B

Credit & Insurance Solutions

$176B

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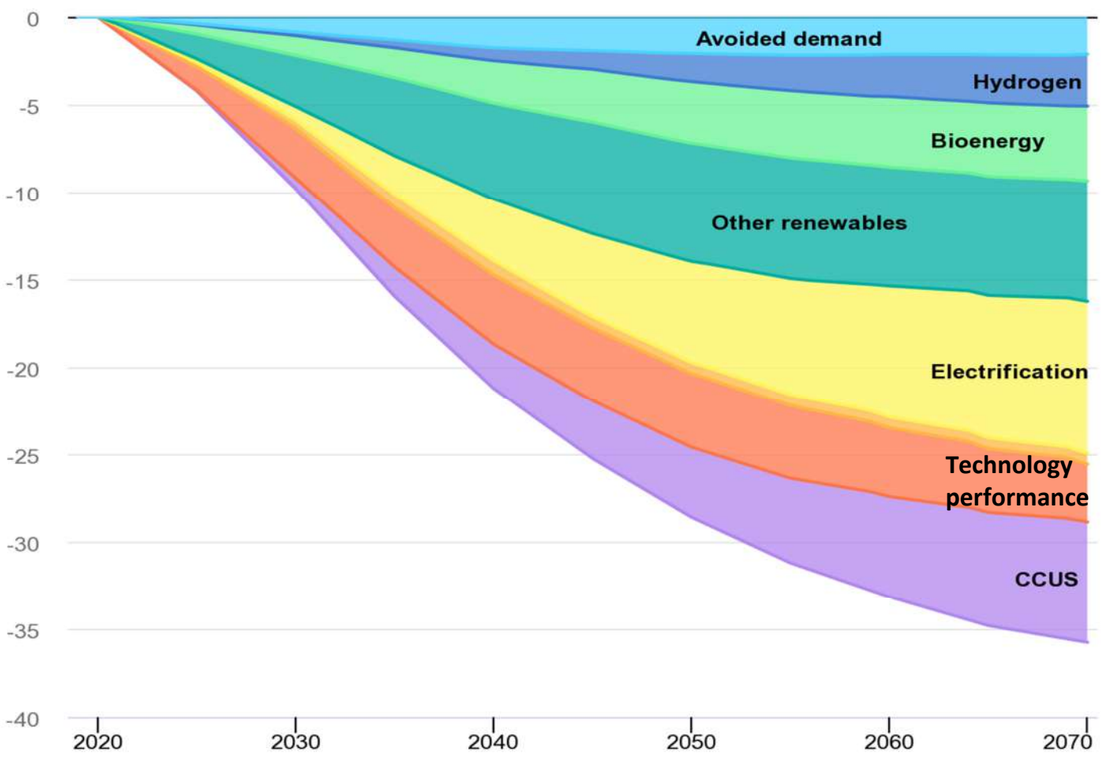
The Role of CCS
Climate Ambitions and Decarbonisation Pathways

CCS is a core pillar of the global decarbonisation agenda

Global energy CO_2 emissions reduction to meet environmental objectives
Billion tonnes per annum (2019–2070)

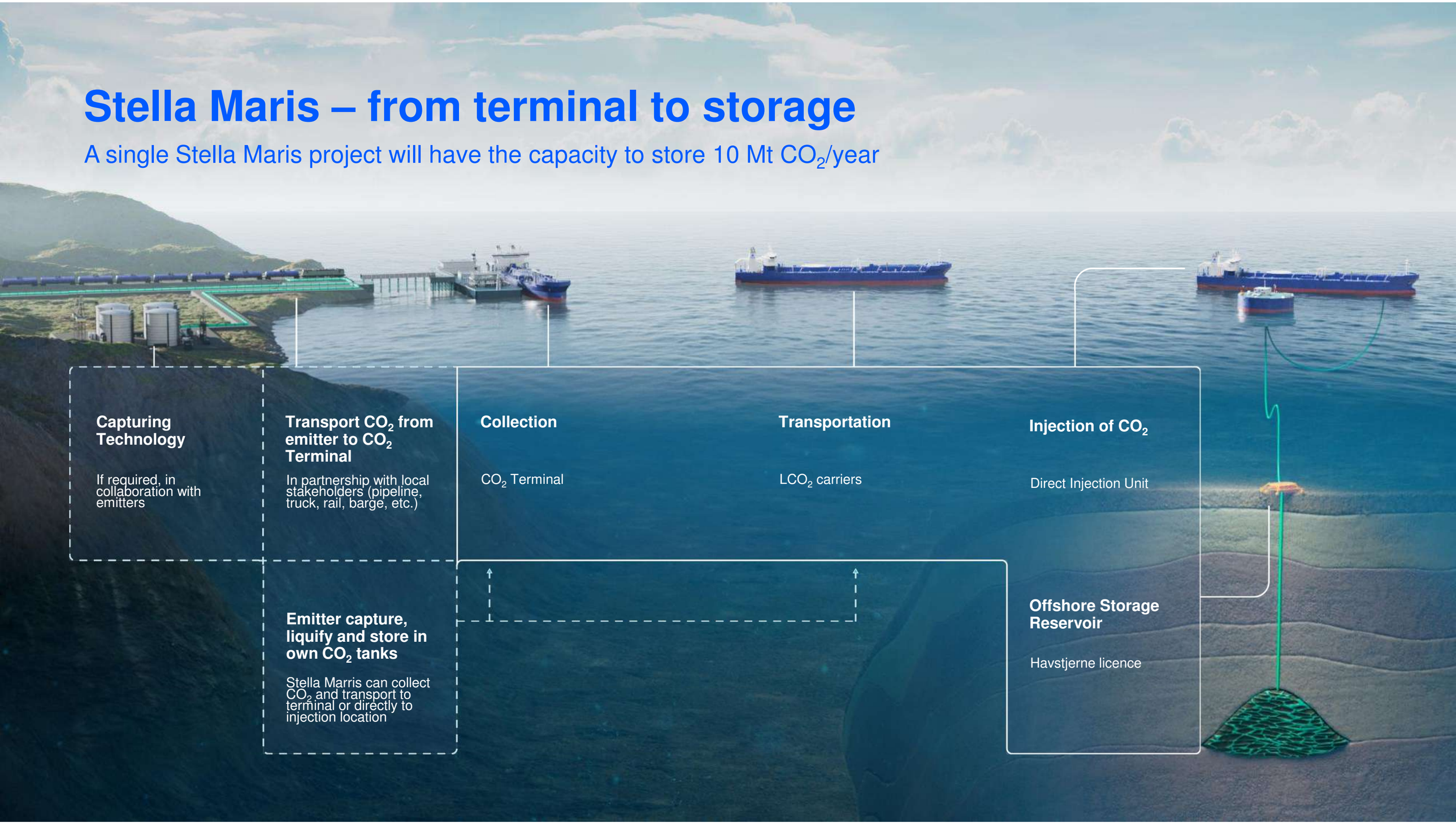


EU ETS is a cornerstone of the EU's policy to combat climate change

Predications for EU ETS are in the range of EUR150-300 for 2030

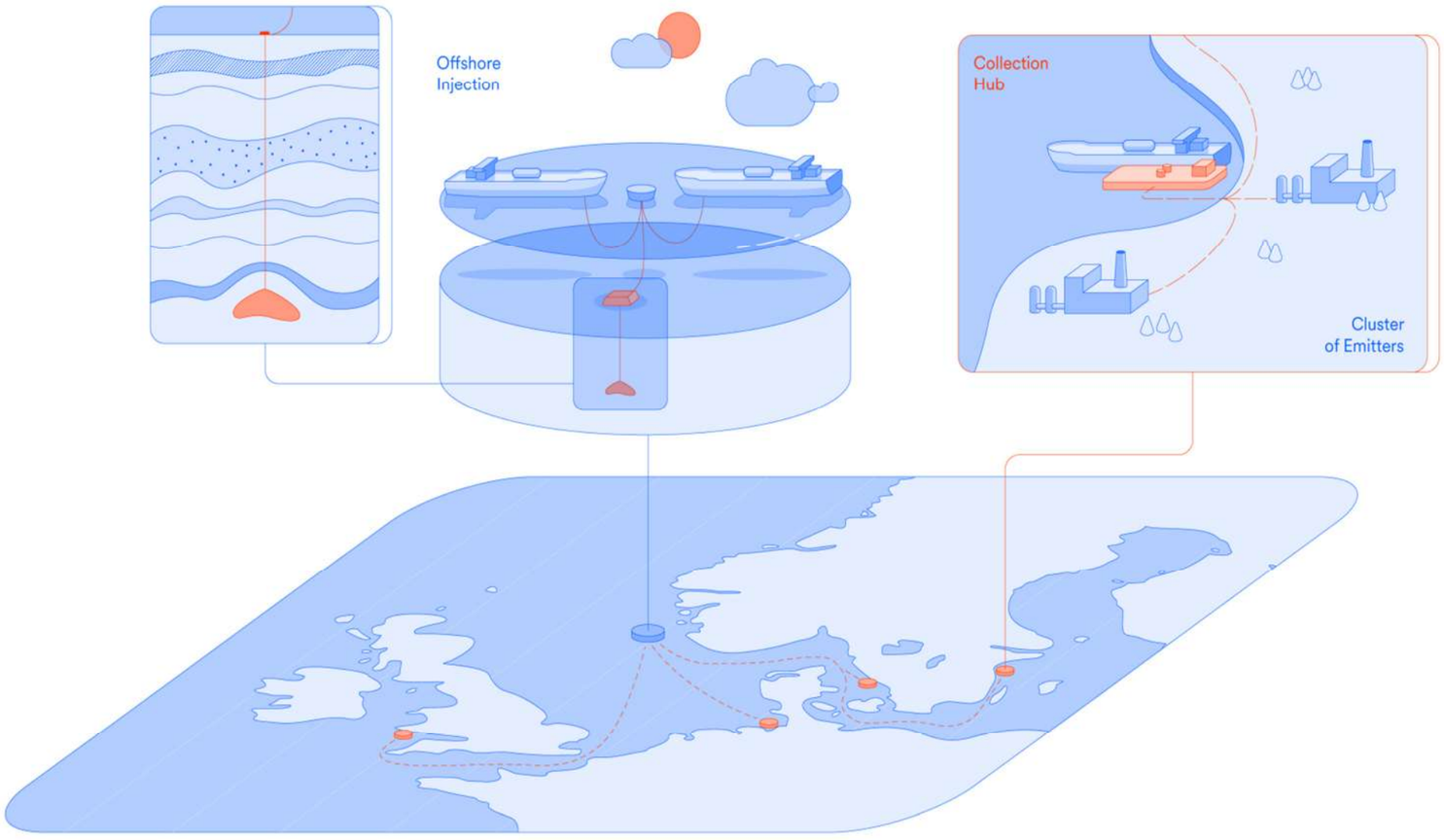
Stella Maris – from terminal to storage

A single Stella Maris project will have the capacity to store 10 Mt CO_2/year



The Stella Maris CCS project

To get CCS costs down, large-scale flexible solutions are required



- One-stop-shop from collection to storage
- Large scale – bringing cost down
- Flexible maritime solution
- Scalable worldwide – design one – build many
- Shared CO_2 infrastructure – also for smaller emitters
- Solution deployed for large scale emitters, clusters and/or nation states in 2027

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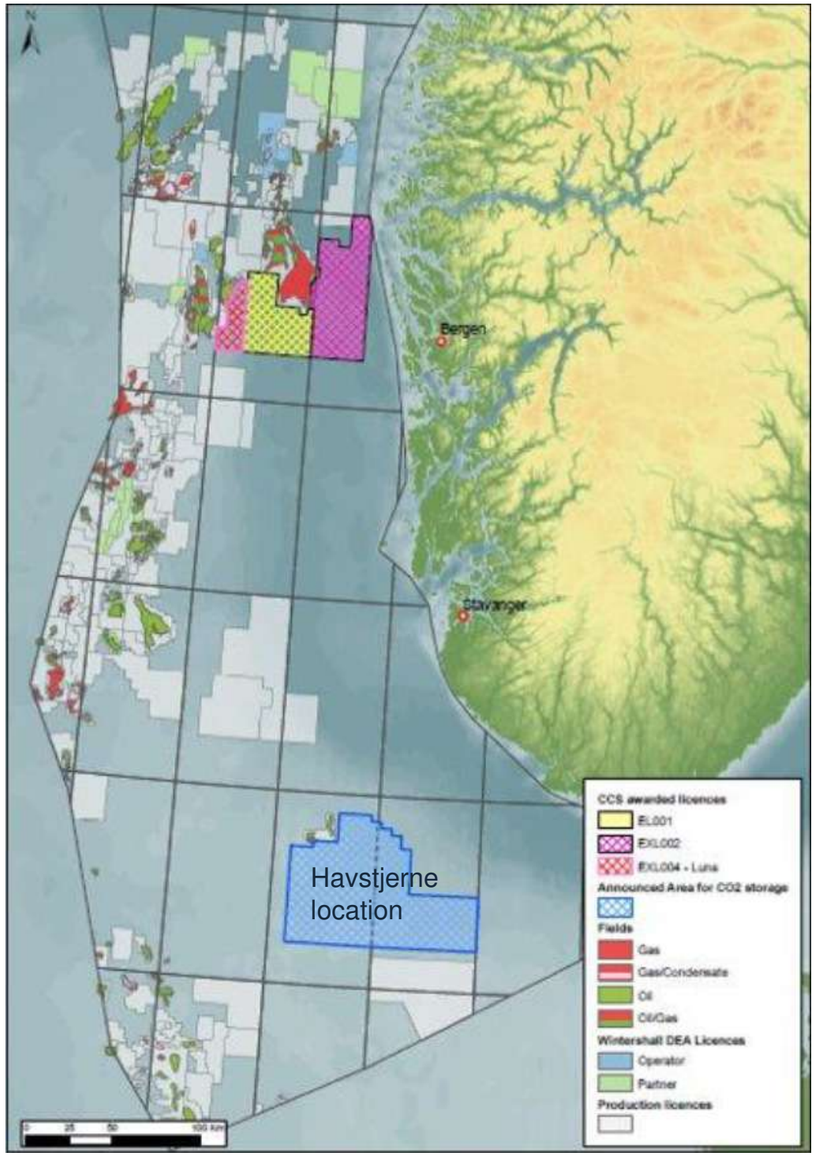
Altera CCS has secured Reservoir Capacity

- In April 2023 Altera (together with Wintershall Dea) secured rights to the Havstjerne Reservoir

Strategic advantage from reservoir

- ✓ Long-term, 200 Mt storage capacity
- ✓ Located in proven geological field
- ✓ Identified as top reservoir after Altera/WD initiated study focusing on competitive advantage from
  - Confidence of reservoir quality
  - Seal capacity
  - CO_2 capacity and total storage potential
- ✓ Altera CCS owns 40% license interest (60% WD)
- ✓ Developing access agreement to allow access, operations and financing to be separated



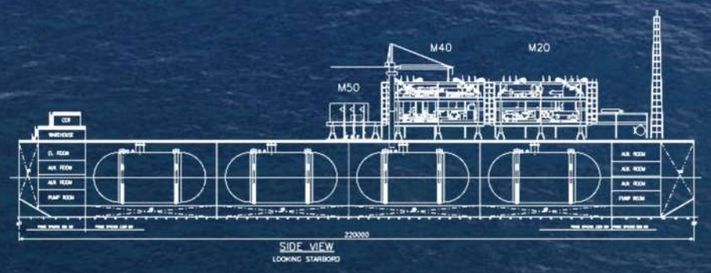
CO_2 Terminal (CO_2T)

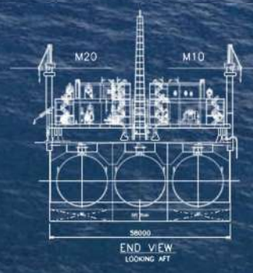
Collection, Processing and Export

Principal dimensions (80k cbm design):

Length o.a.	220m
Breath (M)	58m
Depth (M)	24.5m
Design Draft	13m

- 50–80k cbm storage
- Annual capacity up to 7 mt/unit
- Designed for shore power





Designed to receive and process:

High- & low-pressure gas from pipelines

Medium & low-pressure liquid from road, ships or barges

Various qualities with different levels of impurity

LCO_2 Carriers

Transport and DP offloading

Key Innovations:

Dynamically positioned LCO_2 carrier

Low pressure CO_2 tanks

Equipment for offshore offloading of CO_2

Power Source for injection unit

New, state of the art LCO_2 carrier design

50,000 cbm - low pressure tanks

CO_2 stored and transported as liquid at 6,5 barg & -47°C

Zero emission capable

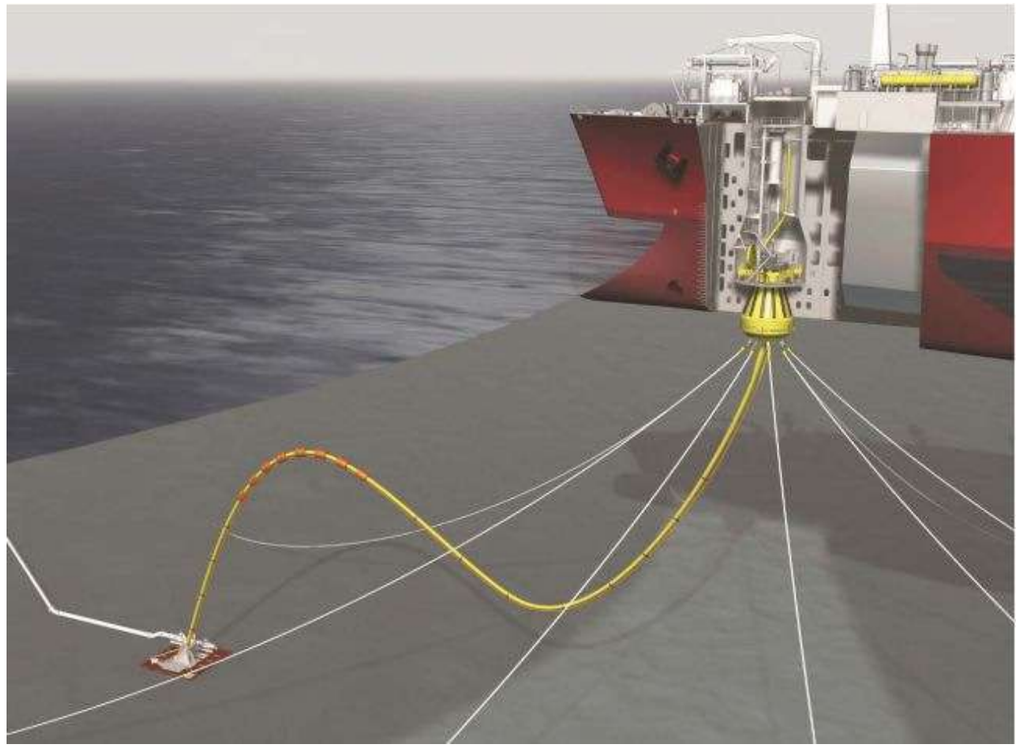
Battery hybrid installation

LNG/Biogas/NH3 as fuel

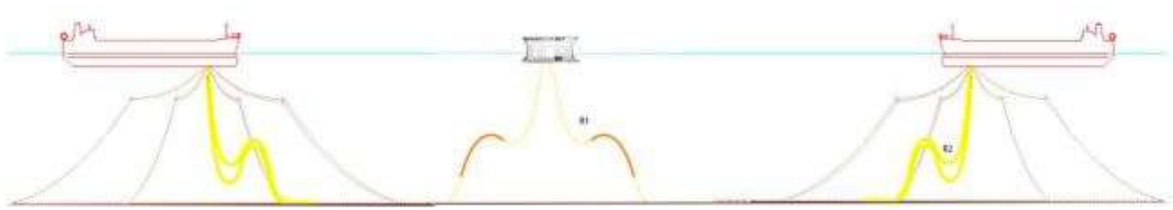
Principal dimensions:

Length o.a.	238m
Breath (M)	38m
Depth (M)	22m
Design Draft	13m

Offshore offloading



- Continuous injection is ensured by always having one carrier at site
- 2nd carrier connects and takes over before the 1st one leaves
- A Submerged Turret Loading (STL) system is used with two independent STL buoys
- Electrical power cable in addition to the CO_2 offloading hose



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Direct injection unit (DIU)

Offshore Injection and Storage

Alternatives

- Injection facilities on an existing offshore installation or on new fixed offshore structure
- Direct injection from LCO_2 carrier

Principal dimensions:

Hull diameter	50m
Bilge Box diameter	62m
Main Deck diameter	50m
Hull depth	22m
Design draft	13m
Draft loaded	14m

- Allows continuous injection
- Heating and injection modules below deck
- Power from LCO_2 carrier (+ battery back-up)
- Unmanned and operations from shore
- CO_2 heated and injected into reservoir in dense phase (>5°C & 65–160 barg)

Key Innovations:

- Power from LCO_2 Carrier
- Normally Unmanned
- Equipment for offshore loading of CO_2
- Zero emission capable
- Remote operation from shore

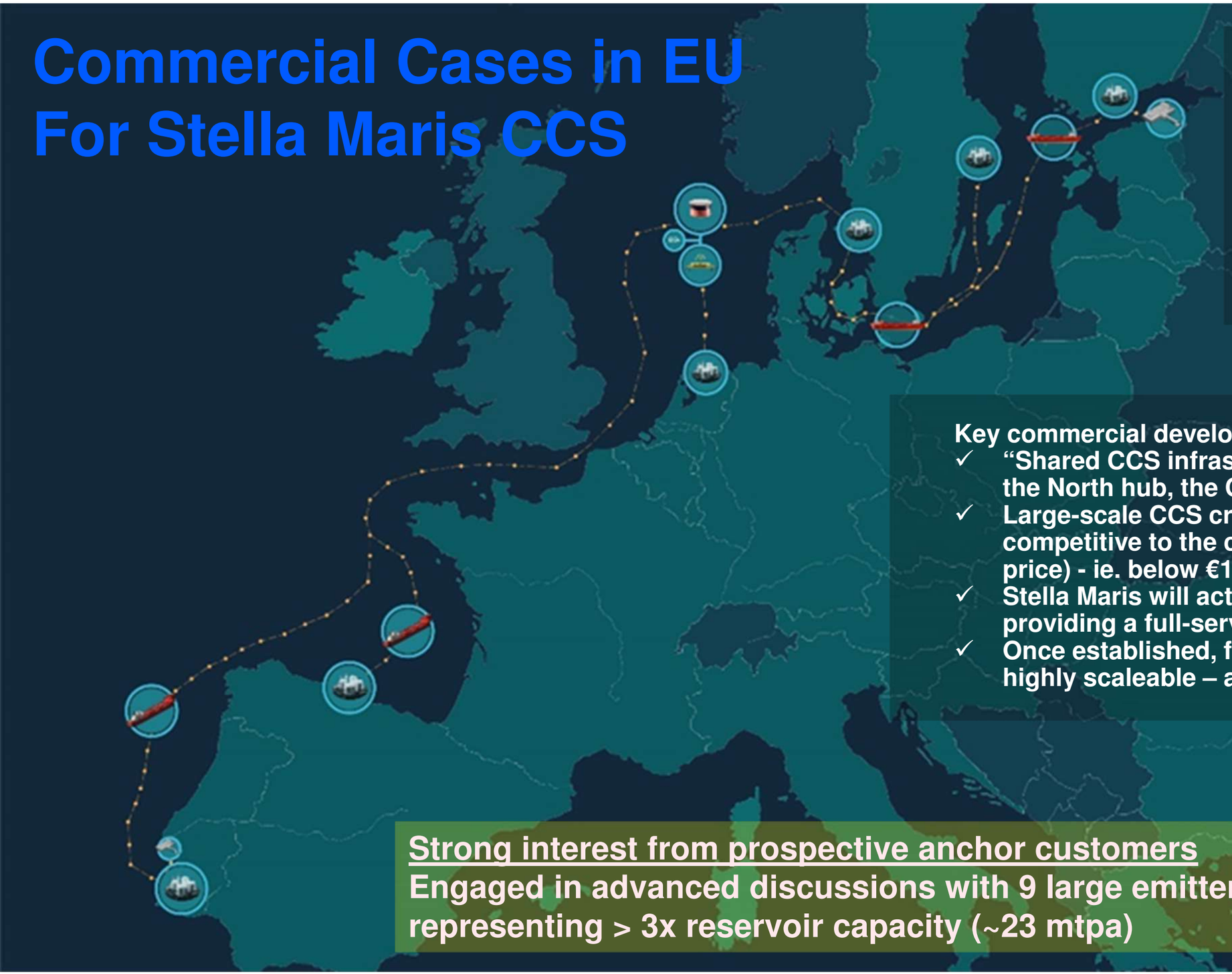
Barge concept

First Mile Transportation

12,500 cbm or 6,250 cbm design

Can reduce the need of local infrastructure

Commercial Cases in EU For Stella Maris CCS



Cross borders hubs (3 main identified):

1. **Central hub: Germany, Belgium (Antwerpen) and Netherlands**
2. **North hub: Sweden, Finland and the Baltics**
3. **South hub: Portugal and Spain**

Key commercial development aspects:

- ✓ **"Shared CCS infrastructure" across Europe, connecting the North hub, the Central hub and Southern hub**
- ✓ **Large-scale CCS creates cost-effective solution competitive to the cost of emissions in EU (e.g. the ETS price) - ie. below €100/t**
- ✓ **Stella Maris will act as single contractual interface providing a full-service CCS solution at a unit price (€/t)**
- ✓ **Once established, full value chain solution becomes highly scaleable – add hubs, ships, reservoirs**

<u>Strong interest from prospective anchor customers</u>
Engaged in advanced discussions with 9 large emitters, representing > 3x reservoir capacity (~23 mtpa)

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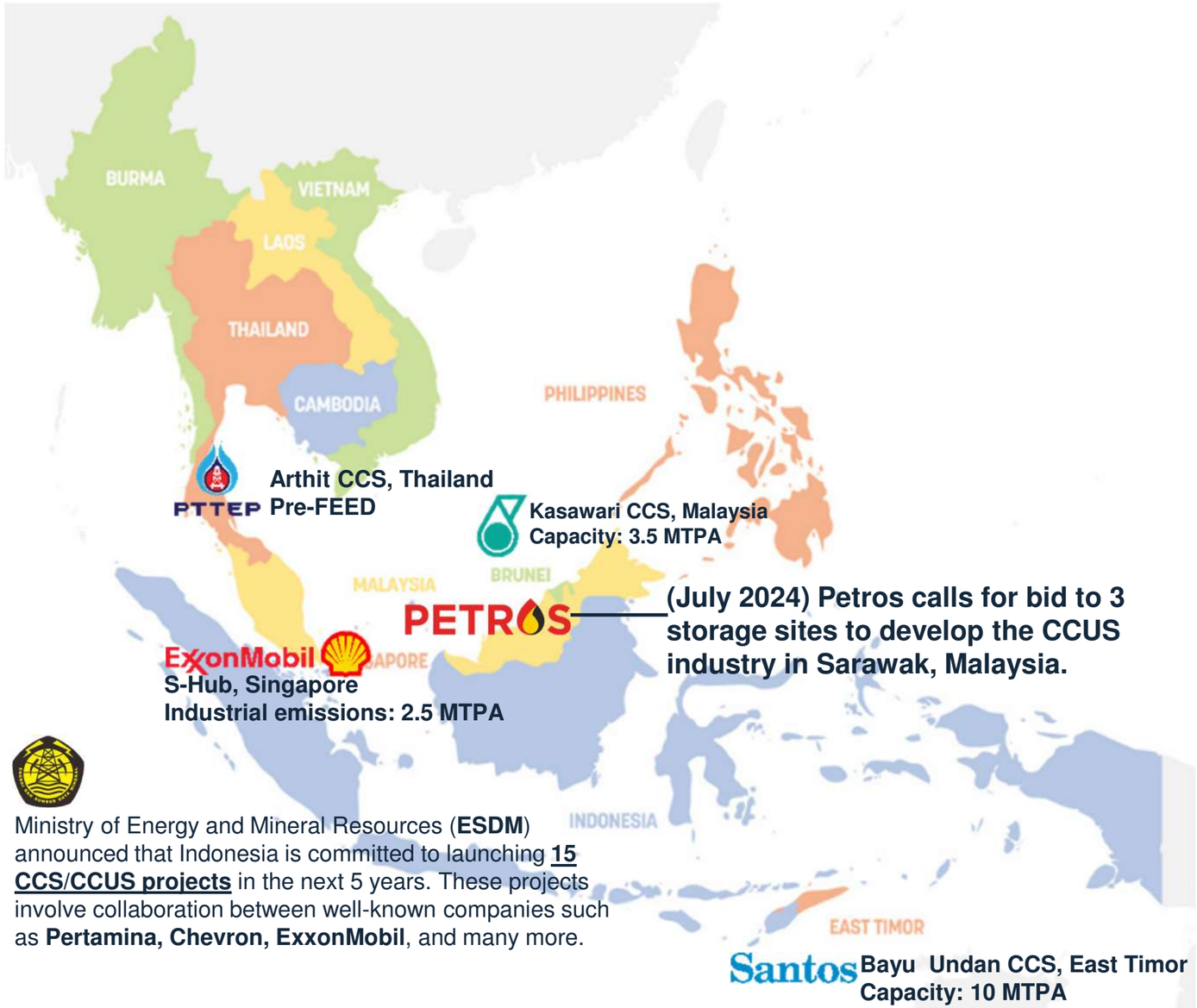
Regional developments and strategy



Ministry of Energy and Mineral Resources (**ESDM**) announced that Indonesia is committed to launching **15 CCS/CCUS projects** in the next 5 years. These projects involve collaboration between well-known companies such as **Pertamina, Chevron, ExxonMobil**, and many more.

The Stella Maris CCS Project

Market focus

- Petronas flagship CCS project to monetize high-CO2 Kasawari gas field and sequester to nearby depleted reservoir
- PTTEP developing their first offshore CCS project in Arthit field with target 2026 start, covering Scope 1 and 2 emissions from E&P
- Santos Bayu Undan CCS collaborates with East Timor regulator for potentially first merchant CCS scheme
- ExxonMobil and Shell formed consortium “S-Hub” to work with Singapore government to develop cross-border CCS value chain
- Accelerating blue hydrogen (and blue ammonia) industrial production with CO2 by-product CCS large-scale decarbonize solution

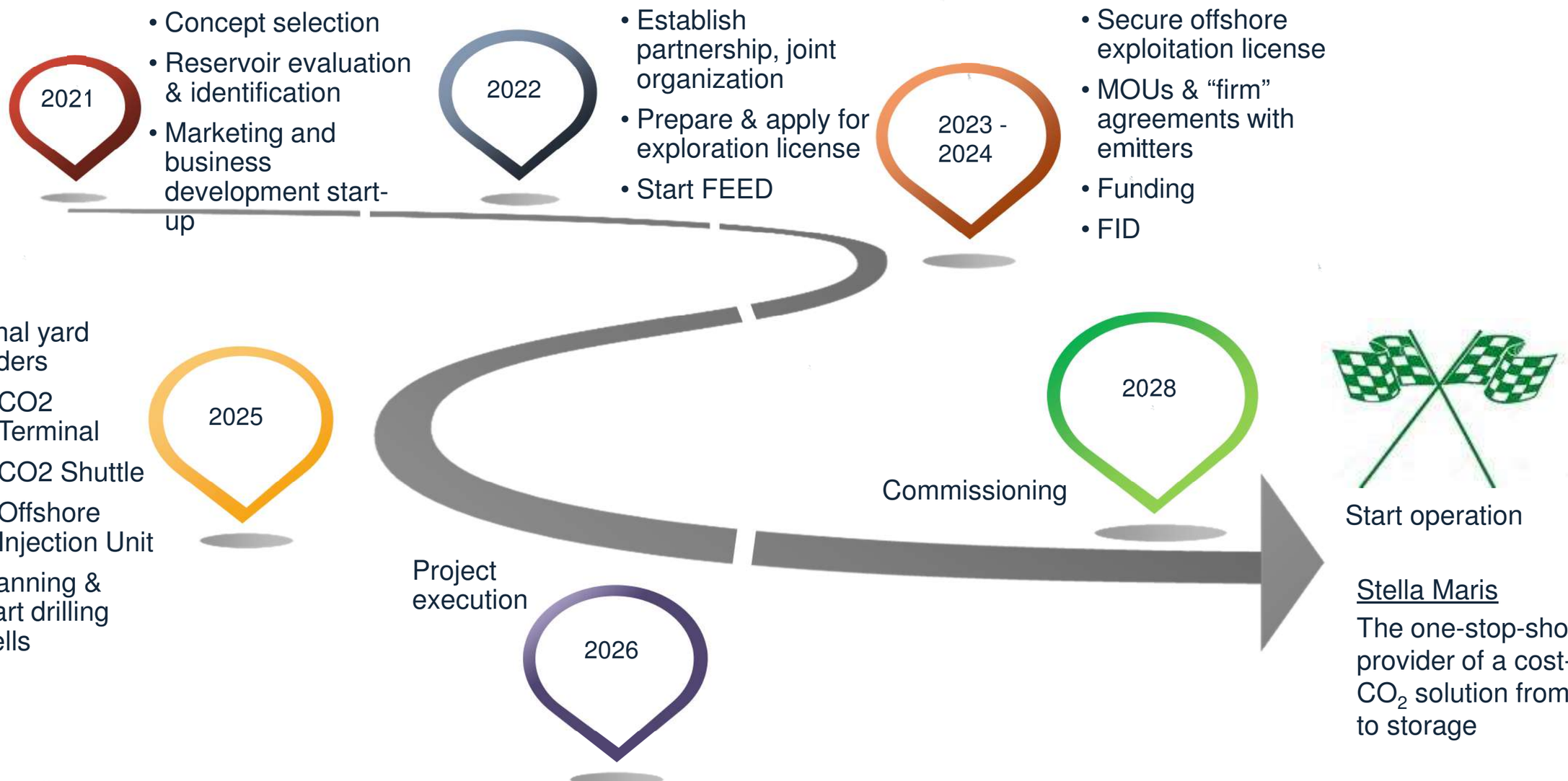
Current Study Contract

CARBON CIRCLE ENGAGED FOR HAVSTJERNE CO2 INJECTION UNIT

- Carbon Circle will under this engineering contract perform the design of a remotely operated, normally unmanned DIU with capacity to receive and inject 11 million ton per year of liquefied CO2.
- Carbon Circle AS is a Norwegian company that delivers EPC projects from early phase studies to project execution and commissioning.

Stella Maris CCS project development milestones

Status and way forward



Stella Maris CCS

Thank You

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